

I CLAIM:

1. An oscillator, comprising:

a first phase shift circuit including a first pole having a first phase shift and a second pole having a second phase shift, wherein the first phase shift circuit generates a first total phase shift including the first phase shift and the second phase shift; and

a second phase shift circuit including a third pole having a third phase shift and a fourth pole having a fourth phase shift, wherein the second phase shift circuit generates a second total phase shift including the third phase shift and the fourth phase shift,

wherein an output of the first phase shift circuit is coupled to an input of the second phase shift circuit, and

wherein an output of the second phase shift circuit is cross-coupled to an input of the first phase shift circuit.

2. The oscillator of claim 1, further comprising a cross-coupled phase shift approximately equal to the first total phase shift and the second total phase shift.

3. The oscillator of claim 1, wherein the first pole includes a capacitance.

4. The oscillator of claim 3, wherein the capacitance comprises a

varactor.

5. The oscillator of claim 4, wherein the varactor comprises a metal oxide semiconductor.

6. The oscillator of claim 5, wherein the metal oxide semiconductor comprises a n-channel metal oxide semiconductor.

7. The oscillator of claim 6, wherein the n-channel metal oxide semiconductor comprises the n-channel metal oxide semiconductor in an NWELL configuration.

8. The oscillator of claim 1, wherein the first phase shift circuit and the second phase shift circuit are configured to generate a quadrature output.

9. The oscillator of claim 8, wherein the quadrature output is generated according to a control signal received at the first and second phase shift circuits.

10. The oscillator of claim 1, wherein the first phase shift circuit further comprises at least one capacitance coupled to at least one of the first pole or the second pole.

11. The oscillator of claim 1, wherein the second phase shift circuit further comprises at least one capacitance coupled to at least one of the third pole or the fourth pole.

12. An oscillator circuit having a cross-coupled configuration, the oscillator circuit comprising:

a first phase shift circuit;

a second phase shift circuit to receive an output from the first circuit as an input and having an output cross-coupled to an input of the first phase circuit; and

at least one pole circuit of a plurality of poles within the first or the second phase circuit, wherein the at least one pole circuit includes a varactor to vary a phase shift generated by the at least one pole circuit.

13. The oscillator circuit of claim 12, wherein the at least one pole circuit comprises a resistance.

14. The oscillator circuit of claim 12, wherein the varactor provides a capacitance to the at least one pole circuit.

15. The oscillator circuit of claim 12, wherein the varactor comprises a metal oxide semiconductor.

16. The oscillator circuit of claim 15, wherein the metal oxide semiconductor comprises an n-channel metal oxide semiconductor.

17. The oscillator circuit of claim 16, wherein the n-channel metal oxide semiconductor is configured to an Nwell configuration within the varactor.

18. The oscillator circuit of claim 12, further comprising a total phase shift for the plurality of poles approximately equal to $\frac{1}{2}$ of a cross-coupled phase shift between the second phase shift circuit and the first phase shift circuit.

19. A transceiver to transmit and receive modulated signals, the transceiver comprising:

a radio frequency receiver/transmitter;

an intermediate frequency component coupled to the radio frequency receiver/transmitter to modify a signal to/from the radio frequency receiver/transmitter; and

an oscillating circuit within the intermediate frequency component to generate a quadrature output signal in response to the signal and including a phase shift circuit having a pole of a plurality of poles, wherein the pole includes a varactor to adjust a phase shift generated by the phase shift

circuit.

20. The transceiver of claim 19, further comprising a demodulator coupled to receive the quadrature output signal.

21. The transceiver of claim 19, wherein the oscillating circuit is configured to be a ring oscillator having the phase shift circuit and another phase circuit.

22. The transceiver of claim 21, wherein the ring oscillator comprises the phase shift circuit and the another phase shift circuit in a cross-coupled configuration.

23. The transceiver of claim 19, wherein the varactor comprises a first semiconductor material.

24. The transceiver of claim 23, wherein the first semiconductor material comprises an n-channel metal oxide semiconductor.

25. A method for adjusting a phase shift in a cross-coupled oscillator, the method comprising:

tuning a varactor in a pole within a phase shift circuit, the phase shift

circuit within an oscillator and coupled to another phase shift circuit; and
changing a phase shift generated by the phase shift circuit according
to the varactor.

26. The method of claim 25, wherein the tuning step comprises
tuning the varactor, the varactor coupled to a resistance within the pole to
generate the phase shift.

27. The method of claim 25, further comprising receiving a control
voltage at the varactor.

28. The method of claim 27, further comprising producing an
amount of current at the varactor in response to the control voltage.

29. The method of claim 28, wherein the producing step comprises
producing the amount of current when the control voltage is at or near a
threshold.

30. A circuit for adjusting a phase shift within a phase shift circuit
in an cross-coupled oscillator, the method comprising:

tuning means for tuning a varactor in a pole within a phase shift
circuit, the phase shift circuit within an oscillator and coupled to another
phase shift circuit; and

changing means for changing a phase shift generated by the phase shift circuit according to the varactor.